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BULLETIN
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§ 102. **Onoclea sensibilis**, var. **obtusilobata.**

By Geo. E. Davenport.

The notes on the variations in *Onoclea* by Prof. Underwood in the September number of the Bulletin lead me to contribute some of my own observations toward supplying data for an explanation of the causes by which the *obtusilobata* form is produced.

I have collected this interesting form of the *Onoclea* so many times, under conditions that utterly precluded all possibility of the specimens being the result of interference with the free growth of the plants which bore them, that I have long been inclined to regard it as an outcome of some inherent tendency on the part of the normal(?) form of the species to break up into other forms, or as a *possible reversion to an older type.*

I have collected specimens late in the season, in open meadow lands, where its appearance subsequent to mowing time suggested a probable cause and effect, but, as I also collected it plentifully in situations where no scythe ever ventured, and where the plants were not only as well protected from accident as it is possible for plants in nature to be, but were otherwise perfectly developed—the sterile fronds being well grown—and in some cases bearing normally-developed fertile fronds as well as the variation, I was led to believe that the plants in the meadows might still have produced *obtusilobata* forms even if they had not been interfered with by the mowers.

I was further confirmed in this view by finding one season, near a rivulet, and on a stony patch *left unmown* at the edge of a meadow newly mown, some of the finest specimens of *obtusilobata* that I have ever collected. From one plant I obtained four specimens of *obtusilobata.*

This plant I marked, and, re-visiting it the following season, found that it had resumed its normal habit and produced fertile fronds of a normal character; *yet there had not been any change whatever in the conditions by which the plant was surrounded.* Now what caused this plant to deviate from its normal habit one season and return to it another under conditions apparently similar—so far as any ordinary observation could judge—in both seasons, and when there was no perceptible outside disturbance to interrupt or interfere in any way with its free growth?

I collected one season sixty specimens of *obtusilobata*, in various stages of development, in one locality from plants, some of which had been injured in various ways and some of which were well supplied with healthy sterile fronds; but the next season I was unable to find a single specimen of the variation there, although I searched carefully, and found plenty of plants injured as before, the locality being one that was exposed to all sorts of accidents.

During the seasons of 1873–74 I made a series of experiments for the purpose of ascertaining, if possible, how far injuries to plants might go toward producing the *obtusilobata* forms. These experiments were begun as early as May, and continued at intervals of a fortnight, up to the 1st of September. During that time some hundreds of plants (the species being everywhere excessively abundant, there was, of course, no danger of exterminating it) in widely different localities were mutilated in every conceivable manner, but no *obtusilobata* was obtained in any instance.

These experiments were continued during the next season with the same unfavorable result, and seemed to show that the variation was not due to any interference with the natural growth of the plants by injury, or mutilation of any kind, whether accidental or designed, and that some other explanation was to be looked for.

Within a month I have collected three specimens of *obtustilobata* on plants with well matured, uninjured sterile fronds, and the appearance of the plants indicated that they had not been disturbed since they first started to grow in the spring.

These observations appear to show that the variation is due to some cause within the plant, rather than to any outside influence, however much such influence may assist in developing an impulse already existing. Finding, as I have more than once done, two plants growing side by side under precisely the same conditions, one with mutilated and the other with perfect, sterile fronds, yet each producing this variation, what other explanation is there than the one found in that disposition to vary which is inherent in the very nature of all plants, and which is likely to manifest itself at any time whenever the right conditions are favorable for such manifestation.

Take the kindred examples of variation in *Osmunda.* The laws which govern the variations of *Onoclea* ought to prevail here as the variation is similar in kind in both genera ; yet, in my own experience, I have never seen a plant with the *frondosa* forms that did not have a plentiful supply of good healthy sterile fronds, and could never discover any difference in the conditions by which the plants were surrounded in the seasons when they produced the variation and in those when they did not.

The fact seems to be that there exists in all plants a tendency toward variation that will manifest itself occasionally whether the plants are injured or not. That changed conditions will oftentimes assist this pre-existing tendency to develop itself is probable, as we know that plants are so affected, but they cannot be regarded as the real cause of these variations which occur quite as often, and, in my experience with the variation under consideration, oftener without such assistance.

Injuries to plants are more likely to produce monstrously aborted forms, and while it cannot be denied that Nature herself, in her efforts to create varieties, oftentimes produces unnaturally abortive monstrosities, yet her efforts are oftener, and as a rule, directed toward the production of improved forms. Now the *obtusilobata* form of *Onoclea* is not in any sense an abortion, but in its most perfect state is an interesting and elegant form. Whether it is to be considered as evidence of an effort on the part of the species to create a variety, or as evidence of *reversion* is an open question. If we accept the doctrine that Nature's efforts are constantly exerted in the direction of duality—a separation of sexes—then the latter theory is not improbable ; but if we look upon *obtusilobata* as a sport—an effort on the part of one species to break up into other species through varietal transitions—then it is not impossible that it may yet become so firmly fixed in its habit as to demand recognition as a good variety, although its present status as such has long been determined adversely.

Medford, Mass., Sept., 1881.

§ 103. **New or Little-Known Ferns f the United States. No. 11.**

By D. C. EATON.

35. WOODSIA MEXICANA, Fée.—" Fronds lanceolate ; pinnules (pinnae) sub-opposite, crenate, short-stalked, very obtuse, smooth ; stalk and rachis smoothish ; sori near the margin, broad, confluent ; receptacle dot-like, scales four, laciniated, narrow, divided at the end into articulated hairs ; sporangia nearly sessile ; ring 18-jointed ; spores oval." 7me Mém. p. 66, t. 26. f. 3.

This fern is not recognized in the Synopsis Filicum, and Fournier has referred it to *W. mollis*, which is a larger and much more rigid fern, and has the involucre at first sub-globose, and enclosing the sori. The true *W. Mexicana* has the involucre cleft almost to the base into 3 to 5 segments, and these divided half-way down or more into a few slender articulated filaments, much as in *W. Oregana*, but on the whole decidedly more conspicuous. The fronds vary from 3 to 8 inches long, and might easily pass for *W. obtusa*, but for the involucre. The segments of the frond are finely but rather deeply toothed, and the teeth end in delicate and semi-transparent tips which are ciliated in the young fronds. When the fronds are mature this ciliation mostly disappears, and the involucre is lost, and then it becomes difficult to distinguish the fronds from those of *W. Oregana* on one side, and *W. obtusa* on the other.

To *W. Mexicana* I refer Drs. Parry and Palmer's No. 1,000, from near San Luis Potosi, Mexico ; Dr. Palmer's plants from Coahuila ; Mr. George R. Vasey's (son of Dr. Vasey, of the Agricultural Department, Washington) from Organ Mts., New Mexico (just received); Rev. E. L. Greene's No. 430, from Pinos Altos Mts., and Mr. Rusby's New Mexican fern distributed as *W. Oregana*, var. To these I venture to add Mr. Charles Wright's No. 2,120, collected in New Mexico thirty years ago, and referred to *W. obtusa* in the Botany of the Mexican Boundary.

§ 104. **White-fruited Mitchella repens,** L.—I have received specimens of a white-berried form of this plant from Dr. Chas. Atwood of Moravia, Cayuga Co., New York. Dr. Atwood writes that it was abundant over a few square feet, and that no red berries were found within the area occupied by the plants with white ones. This variation has also been noticed at Canaan, Conn., and recorded in the BULLETIN. See Vol. iii, p. 43.

N. L. BRITTON.